



Advanced Technical Information

**PolarHV™**  
**Power MOSFET**

**IXTC 26N50P**

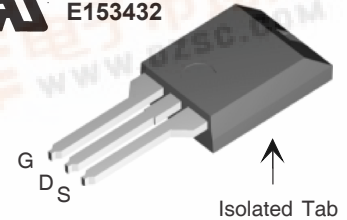
$V_{DSS} = 500 \text{ V}$   
 $I_{D25} = 13 \text{ A}$   
 $R_{DS(on)} = 260 \text{ m}\Omega$

Electrically Isolated Tab,  
N-Channel Enhancement Mode,  
Avalanche Rated



Symbol	Test Conditions	Maximum Ratings	
$V_{DSS}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$	500	V
$V_{DGR}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GS} = 1 \text{ M}\Omega$	500	V
$V_{GS}$	Continuous	$\pm 20$	V
$V_{GSM}$	Transient	$\pm 30$	V
$I_{D25}$	$T_C = 25^\circ\text{C}$	13	A
$I_{DM}$	$T_C = 25^\circ\text{C}$ , pulse width limited by $T_{JM}$	78	A
$I_{AR}$	$T_C = 25^\circ\text{C}$	26	A
$E_{AR}$	$T_C = 25^\circ\text{C}$	40	mJ
$E_{AS}$	$T_C = 25^\circ\text{C}$	1.0	J
$dv/dt$	$I_S \leq I_{DM}$ , $di/dt \leq 100 \text{ A}/\mu\text{s}$ , $V_{DD} \leq V_{DSS}$ , $T_J \leq 150^\circ\text{C}$ , $R_G = 4 \Omega$	10	V/ns
$P_D$	$T_C = 25^\circ\text{C}$	100	W
$T_J$		-55 ... +150	$^\circ\text{C}$
$T_{JM}$		150	$^\circ\text{C}$
$T_{stg}$		-55 ... +150	$^\circ\text{C}$
$T_L$	1.6 mm (0.062 in.) from case for 10 s	300	$^\circ\text{C}$
$V_{ISOL}$	50/60 Hz, RMS, $t = 1$ , leads-to-tab	2500	V~
$F_C$	Mounting Force	11..65/2.5..15	N/lb
<b>Weight</b>		2	g

ISOPLUS220™ (IXTC)  
E153432



G = Gate      D = Drain  
S = Source

**Features**

- Silicon chip on Direct-Copper-Bond substrate
- High power dissipation
- Isolated mounting surface
- 2500V electrical isolation
- Low drain to tab capacitance (<30pF)

**Applications**

- DC-DC converters
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- AC motor control

**Advantages**

- Easy assembly
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values		
		Min.	Typ.	Max.
$V_{DSS}$	$V_{GS} = 0 \text{ V}$ , $I_D = 250 \mu\text{A}$	500		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 250 \mu\text{A}$	2.5		5.0 V
$I_{GSS}$	$V_{GS} = \pm 30 \text{ V}_{DC}$ , $V_{DS} = 0$			$\pm 100 \text{ nA}$
$I_{DSS}$	$V_{DS} = V_{DSS}$ $V_{GS} = 0 \text{ V}$ $T_J = 125^\circ\text{C}$			25 $\mu\text{A}$ 250 $\mu\text{A}$
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$ , $I_D = I_T$ Pulse test, $t \leq 300 \mu\text{s}$ , duty cycle $d \leq 2 \%$			260 $\text{m}\Omega$

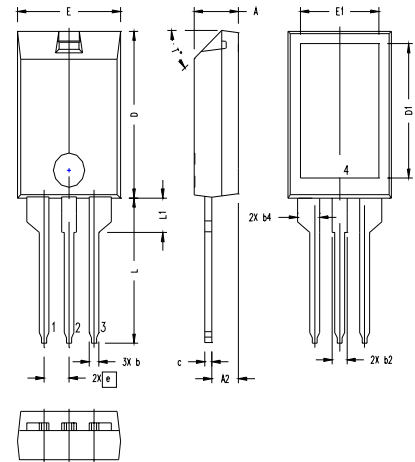


Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		Min.	Typ.	Max.
$g_{fs}$	$V_{DS} = 10\text{ V}$ ; $I_D = I_T$ , pulse test	20	28	S
$C_{iss}$	$V_{GS} = 0\text{ V}$ , $V_{DS} = 25\text{ V}$ , $f = 1\text{ MHz}$		3600	pF
$C_{oss}$			380	pF
$C_{rss}$			48	pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}$ , $V_{DS} = 0.5 V_{DSS}$ , $I_D = I_T$ $R_G = 4\ \Omega$ (External)		20	ns
$t_r$			25	ns
$t_{d(off)}$			58	ns
$t_f$			20	ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}$ , $V_{DS} = 0.5 V_{DSS}$ , $I_D = I_T$		96	nC
$Q_{gs}$			20	nC
$Q_{gd}$			45	nC
$R_{thJC}$				1.25 K/W
$R_{thCK}$		0.21		K/W

Source-Drain Diode		Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
Symbol	Test Conditions	Min.	typ.	Max.
$I_S$	$V_{GS} = 0\text{ V}$			26 A
$I_{SM}$	Repetitive			78 A
$V_{SD}$	$I_F = I_S$ , $V_{GS} = 0\text{ V}$ , Pulse test, $t \leq 300\ \mu\text{s}$ , duty cycle $d \leq 2\%$			1.5 V
$t_{rr}$	$I_F = 25\text{ A}$ $-di/dt = 100\text{ A}/\mu\text{s}$		400	ns
$Q_{RM}$		$V_R = 100\text{ V}$		5.0

Note: Test Current  $I_T = 13\text{ A}$

### ISOPLUS220 Outline

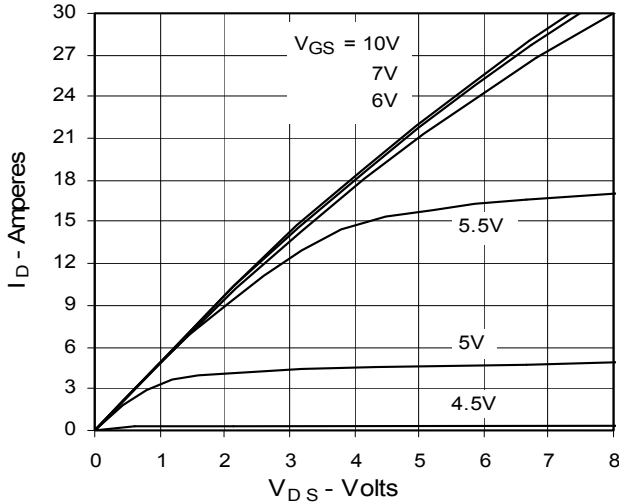


SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.157	.197	4.00	5.00
A2	.098	.118	2.50	3.00
b	.035	.051	0.90	1.30
b2	.049	.065	1.25	1.65
b4	.093	.100	2.35	2.55
c	.028	.039	0.70	1.00
D	.591	.630	15.00	16.00
D1	.472	.512	12.00	13.00
E	.394	.433	10.00	11.00
E1	.295	.335	7.50	8.50
e	.100 BASIC		2.55 BASIC	
L	.512	.571	13.00	14.50
L1	.118	.138	3.00	3.50
T*			42.5*	47.5*

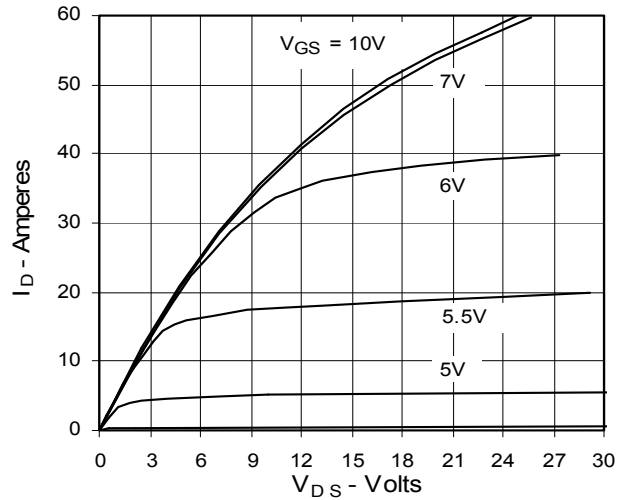
**NOTE:**

- Bottom heatsink (Pin 4) is electrically isolated from Pin 1, 2, or 3.
- This drawing will meet dimensional requirement of JEDEC SS Product Outline 10-273 except D and D1 dimension.

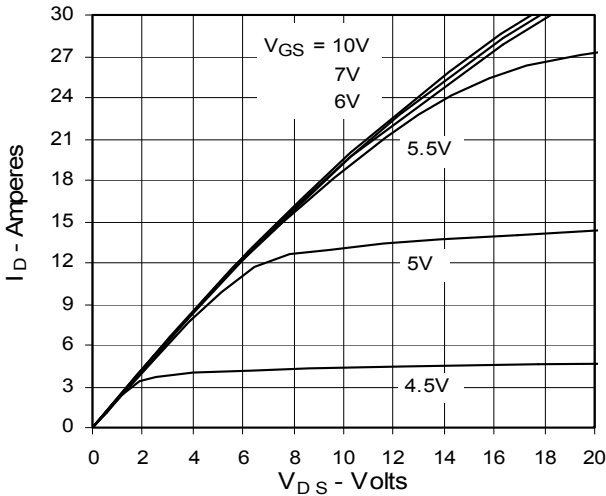
**Fig. 1. Output Characteristics @ 25°C**



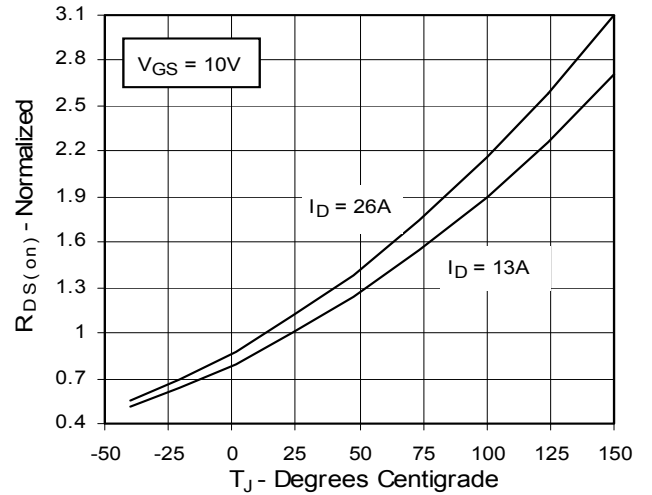
**Fig. 2. Extended Output Characteristics @ 25°C**



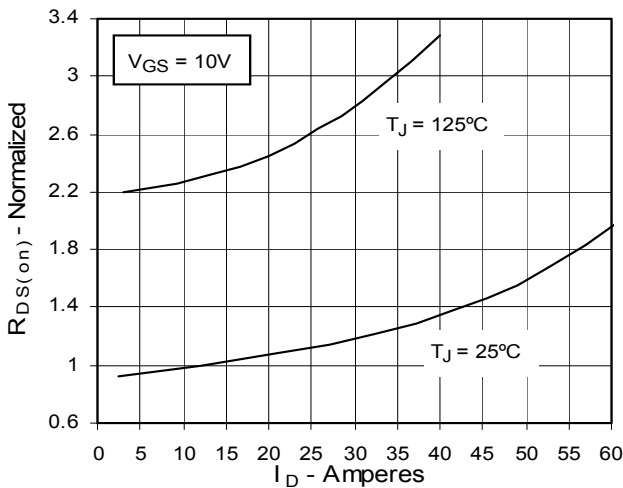
**Fig. 3. Output Characteristics @ 125°C**



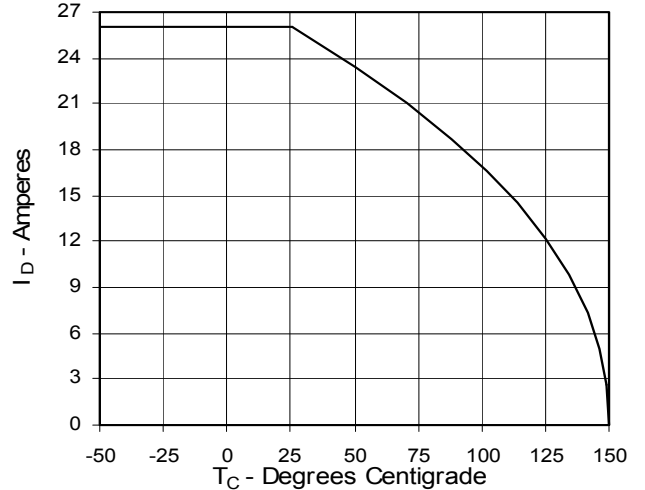
**Fig. 4.  $R_{DS(on)}$  Normalized to 0.5  $I_{D25}$  Value vs. Junction Temperature**



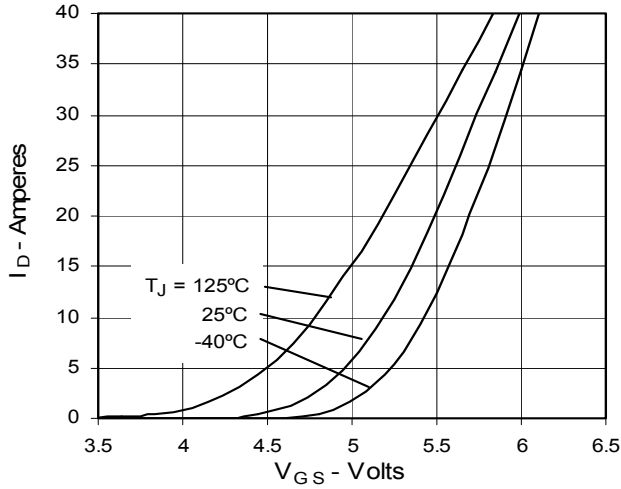
**Fig. 5.  $R_{DS(on)}$  Normalized to 0.5  $I_{D25}$  Value vs.  $I_D$**



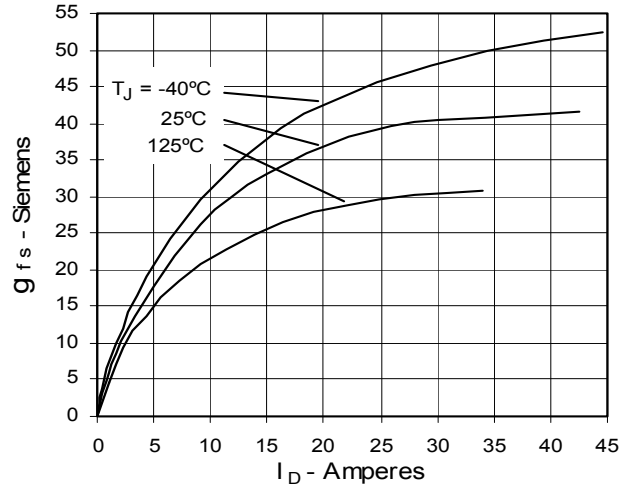
**Fig. 6. Drain Current vs. Case Temperature**



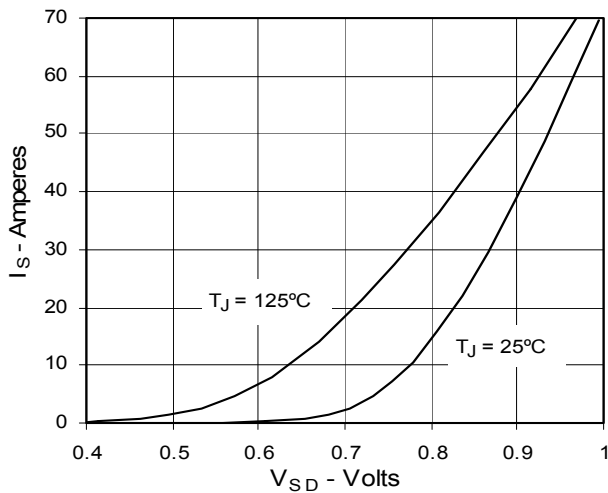
**Fig. 7. Input Admittance**



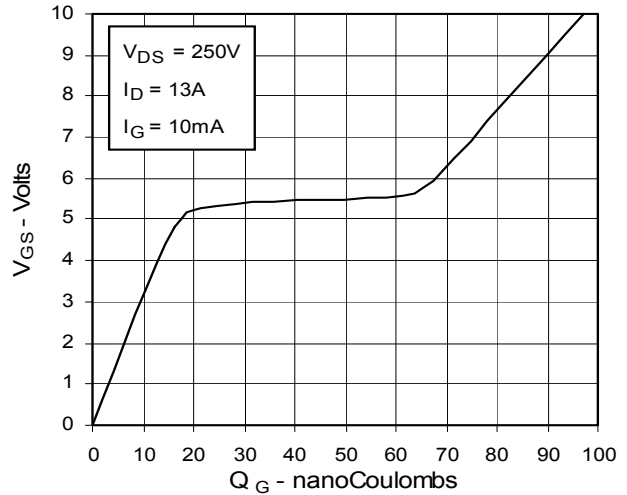
**Fig. 8. Transconductance**



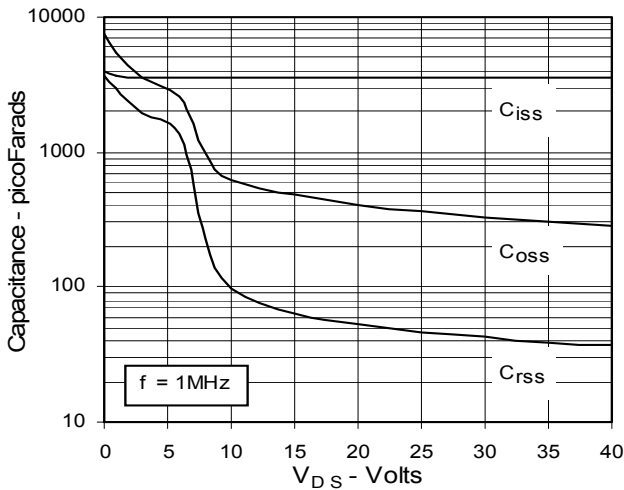
**Fig. 9. Source Current vs. Source-To-Drain Voltage**



**Fig. 10. Gate Charge**



**Fig. 11. Capacitance**



**Fig. 12. Forward-Bias Safe Operating Area**

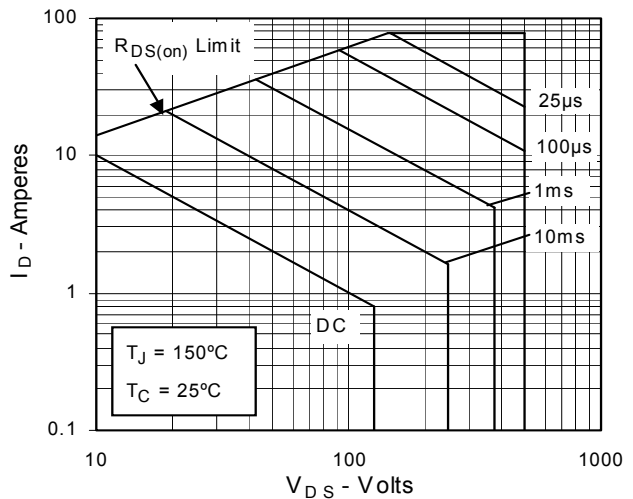


Fig. 13. Maximum Transient Thermal Resistance

